Summary of Cancer Incidence and Mortality for Zip Code 29206 (Columbia, SC)

Cancer Incidence in Zip Code 29206

The first step in the analysis of cancer data for zip code 29206 was to look at the number of new cancer cases diagnosed in the zip code and compare this to the number of cancer cases expected (see Table 1). This first step determines if there is anything unusual with cancer patterns in the area. The number of "expected" cancer cases is calculated by using South Carolina cancer rates and applying them to the population of the zip code.

Table 1 shows what types of cancer occurred in zip code 29206 from 1996-2000, and how many cancer cases were expected. Overall, there were more cases of cancer than expected. A total of 555 new cases of cancer occurred in the zip code, while 546 cases were expected. However, this difference was not statistically significant. The most common types of cancer were female breast, lung, prostate, and colon/rectum cancers. These four types of cancer are also the most common cancers occurring across all of South Carolina.

The analysis revealed that the number of **female breast cancer cases** that occurred was significantly higher than expected. A total of 101 cases of female breast cancer were diagnosed while 80 cases were expected.

Research has shown that there are several factors that put a woman at increased risk for breast cancer. These risk factors include increasing age, a family history of breast cancer, prior history of breast cancer or benign breast disease, early age at onset of menstruation, late age at menopause, and late age at first pregnancy or not having children. Also, about 1 in 10 breast cancers are linked to changes in certain genes. Inheriting a mutated gene from either parent means a woman is more likely to develop breast cancer.

The use of alcohol and being overweight are clearly linked to a higher risk of breast cancer. However, other areas are not as clear as to their effects on breast cancer risk. For example, a recent study found that the use of birth control pills slightly increased the risk of breast cancer. However, women who stopped using the pill more than ten years ago do not seem to have an increased risk. Also, most studies suggest that long-term use (5 or more years) of Hormone Replacement Therapy (HRT) may slightly increase the risk of breast cancer.

There are several factors that we know do not increase breast cancer risk. Studies have shown that induced abortions and miscarriages do not increase the risk of breast cancer. Also, current research does not clearly show a link between breast cancer and exposure to pollutants such as pesticides[1].

Cancer Deaths in Zip Code 29206

To assess cancer deaths in this zip code, cancer mortality data from 1997-2001 were used. The same process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred and the number expected in the zip code. A total of 203 cancer deaths occurred in this zip code, while 273 deaths were expected. Therefore, fewer cancer deaths occurred than expected. There was one type of cancer death that was significantly elevated, **Non-Hodgkin's Lymphoma (NHL) deaths**.

A total of 19 NHL deaths occurred while 10 were expected. There are very few risk factors associated with NHL. Research has shown that certain genetic diseases can cause children to be born with a deficient immune system, which can increase their risk of developing NHL later in life. Also, exposure to radiation (such as in patients treated with radiation therapy for some other cancer) can increase the risk of developing NHL as a second cancer. Certain types of infection, such as Epstein-Barr virus, can also increase risk[1].

Conclusions

To summarize, more cancer cases occurred in zip code 29206 than expected; however, this difference was not statistically significant. The number of female breast cancer cases that occurred in the zip code was significantly higher than expected. Statistics show that Richland County ranks 8th among the 46 counties in the state for female breast cancer incidence. Therefore, higher female

breast cancer rates are a trend seen not only in zip code 29206, but also across all of Richland County.

Finally, there were fewer cancer deaths overall than expected in the zip code. NHL deaths were significantly higher than expected. Richland County ranks 7th in the state for NHL mortality. Again, this pattern of higher NHL mortality rates is seen at the county-level as well.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Along with statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer rather than more common cancers like breast or lung cancers. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer.

Taking all these criteria into consideration, there is no evidence of cancer clustering or of cancers resulting from environmental exposures in zip code 29206.

For questions about this report, please contact Laura Sanders at the SC Central Cancer Registry.

Report provided by:
SC Central Cancer Registry
Department of Health and Environmental Control
2600 Bull St.
Columbia, SC 29201
Phone: (800) 817-4774 or (803) 898-3696

References

1. American Cancer Society, 2001. www.cancer.org

Information on cancer incidence provided by the SC Central Cancer Registry, Office of Public Health Statistics and Information Services, SC Dept. of Health and Environmental Control.

Information on cancer mortality provided by the Division of Vital Records and the Division of Biostatistics, SC Dept. of Health and Environmental Control.

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Table 1. Analysis of New Cancer Cases in Zip Code 29206, 1996-2000

Site	Observed No. of Cases	Expected No. of Cases	Observed/Expected	Chi-SquareTest*
Breast (Female)	**101**	**80.1**	**1.26**	**5.44**
Lung/Bronchus	88	86.9	1.01	0.01
Prostate	72	87.8	0.82	2.83
Colon/Rectum	66	65.9	1.00	0.00
Bladder	30	23.1	1.30	2.03
Non-Hodgkin's Lymphoma	23	18.0	1.28	1.38
Melanoma	20	17.4	1.15	0.39
Pancreas	16	13.1	1.22	0.65
Oral/Pharynx	15	14.8	1.02	0.00
Uterus	13	13.4	0.97	0.01
Leukemia	12	11.0	1.09	0.09
Brain/CNS	12	7.2	1.66	3.18
Kidney/Renal Pelvis	10	13.5	0.74	0.89
Ovary	10	9.1	1.10	0.09
Stomach	7	9.1	0.77	0.48
Multiple Myeloma	7	6.4	1.10	0.06
Thyroid	5	5.1	0.97	0.00
Cervix	4	7.1	0.56	1.37
Larynx	3	6.3	0.47	1.74
Esophagus	2	7.2	0.28	3.74
All Sites	555	546.4	1.02	0.13

Excludes in situ cases of cancer to allow for comparison.
Cancer sites with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers.
*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.
Prepared by: SC Central Cancer Registry, Office of Public Health Statistics and Information Services, Department of Health and Environmental Control, 2600 Bull St., Columbia, SC 29201
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Table 2. Analysis of Cancer Deaths in Zip Code 29206, 1997-2001

Site	Observed No. of Deaths	Expected No. of Deaths	Observed/Expected	Chi-SquareTest*
Lung/Bronchus	56	77.9	0.72	6.17
Colon/Rectum	19	27.6	0.69	2.69
Breast (Female)	19	19.2	0.99	0.00
Non-Hodgkin's Lymphoma	**19**	**10.1**	**1.88**	**7.84**
Prostate	15	23.2	0.65	2.92
Pancreas	13	15.3	0.85	0.36
Leukemia	8	10.0	0.80	0.39
Stomach	5	6.9	0.73	0.52
Brain/CNS	5	6.4	0.78	0.30
Ovary	5	6.3	0.80	0.26
Bladder	4	5.6	0.71	0.48
Liver	4	5.2	0.76	0.29
Multiple Myeloma	3	6.6	0.45	1.97
Esophagus	3	6.1	0.49	1.56
All Sites	203	272.7	0.74	17.82

Cancer sites with less than 5 cancer deaths expected are not analyzed due to the unreliability of statistical tests based on small numbers.
*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of deaths is signficantly different from the expected number of deaths.
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